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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/512,360	02/24/2000	Hideshi Kawasaki	35.C14272	4685
5514	7590	02/25/2004	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO			RAMSEY, KENNETH J	
30 ROCKEFELLER PLAZA			ART UNIT	
NEW YORK, NY 10112			PAPER NUMBER	

2879

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

87

Office Action Summary	Application No. 09/512,360	Applicant(s) KAWASAKI, HIDESHI	
	Examiner Kenneth J. Ramsey	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7 and 13-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 7 and 13-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Prior Art Rejections

- 1) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- 2) Claims 1 and 13-18 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Suzuki et al EP 726,591 (Suzuki '591) in view of Suzuki et al EP 729,168 (Suzuki '168) and Cherry et al 4,849,674 (Cherry). Suzuki '591 discloses the steps of fabricating an electron source composed of plural electron emission devices connected in a matrix by plural row wirings and plural column wirings, comprising forming a matrix of emitter device pre-elements, dividing the matrix of pre-elements into plural groups and sequentially applying an activation voltage in an atmosphere containing an organic gas to each group to generate a carbon deposit in a gap portion of each pre-element. See page 3, column 2, lines 28-35; and page 9, column 1, lines 14-45. Suzuki '591 clearly discloses that there are more than 5 groups, each comprised of a row or column of the electron emission devices. Suzuki 591 differs from claim 1, in two ways: 1) that it is not disclosed to activate more than one row or column of emission devices at the same time; 2) that it is not disclosed to space the individual rows of a group from each other; and 3) it is not disclosed to also space subsequent row or columns on the next activated group a plurality of rows from the previously activated group of emission devices. The first

difference is clearly obvious in that the more rows that are activated at the same time, the shorter the activation process. See for instance Suzuki '168, page 13, lines 21-27 where a plurality of rows are selected while taking into consideration the current capacity of the voltage supply in order to reduce the processing time. Although Suzuki '168 is directed to the initial forming of emission devices having fissures therein rather than to a subsequent step of improving the emission property by depositing a carbon material, this teaching still would have made obvious the step of selecting a plurality of rows in Suzuki '591 for the purpose of forming a carbon deposit to improve the emission property since each process requires the application of a current to each of the devices being formed or activated. The second and third differences are actually related in that they are each made obvious by a single characteristic of the manufacturing process, that is that the activation process is sensitive to temperature differences within the substrate. With respect to the forming process, Suzuki '168, page 4, lines 18-25 and page 5, lines 22-38, clearly indicates that several problems arise if excessive temperature gradients arise in the substrate. It is axiomatic that the activation process of depositing carbon is also sensitive to temperature gradients in the substrate since the process is a chemical process and chemical processes are temperature dependent. Also, since the activation process relies upon applying a current to the emission devices there is a common problem of thermal shock or deformation as in Suzuki '168. Suzuki '168 solved this problem by employing a "zigzag manner" of device forming. See page 13, line 23. By "zigzag manner" it is generally meant to follow a path that alternates

between two extremes in the opposite directions. In the specific embodiments of Suzuki '168 where there are basically two groupings of devices, for instance odd rows and even rows of devices, to be activated, the alternate devices that are activated while allowing the unactivated devices to cool simply are the odd and even devices, thus the pattern of groupings is simply sifted one row to the left and then one row to the right repetitively. However, Suzuki '168, page 13, lines 21-27 indicates that whether there are a plurality of groupings greater than 5 as in Suzuki '591 or just 2 groupings as in Suzuki '168 is at least partially dependent upon the current capacity of the voltage supply. This of course is further determined by the amount of voltage differential required for the respective processes. The examiner maintains that where it is determined to process n of the N total rows of Suzuki '591 at a time as suggested by Suzuki '168, the spacing of the adjacent rows should generally be uniform and equal to the integral part of the quotient N/n , and furthermore that that the succeeding group of rows should generally be at the colder parts of the substrate, i.e. spaced apart from the preceding group of rows, to best spread out the thermal effects of the process in order to maintain a uniform temperature of the substrate, since the teaching of Suzuki '168, at pages 4 and 5, noted above, teaches one of ordinary skill in the art to maintain a uniform substrate temperature. It would have been obvious to one of ordinary skill in the art that if the row wires were not uniformly spread across the display substrate and if the successive groupings of emission devices were not spaced apart from preceding

grouping of emission devices, the heat across the substrate would be less uniform.¹

This logic is confirm by the teaching of Cherry, lines 23-26, which teaches an activation process comprising dividing the row wirings into 16 groups of row wirings with adjacent wires of each group spaced apart 16 by rows and wherein each successive group of activated rows is spaced apart from the preceding group of rows to allow the preceding group of wires to cool the succeeding group of wires (lines 22-23 of Cherry). The art further teaches repetively cycling the activation currents in this fashion "Spaced sets of electrodes are cycled in this fashion for about 90 minutes until the panel has initially been formed to about 25 volts."

Because Cherry speaks of spaced sets of electrodes (not sets of spaced electrodes) and because the purpose is to allow cooling of the preceding set of electrodes, one of ordinary skill in the art would have cycled the successive groupings of electrodes in Suzuki '591 so that the there are rows of other groupings between each successively activated group of electrodes. As to claim 13, the device of Suzuki '591 is an image forming apparatus for forming an image as stated in the claim. Likewise, the subject matter of claim 14 and its dependent claims is also obvious for the same reasons. Since the prior art thus taught each of the limitations of the claims the claimed invention is obvious.

¹ Other processing conditions could also be best kept uniform by the same manner but the examiner need make no reliance thereupon since uniformity of the thermal condition is axiomatic if there is to be uniformity of a chemical process.

Response to Arguments

Applicants' argument that the successive sets of activated wires are not spaced apart from each other and that Cherry was merely referring to the spacing of the rows in each set of electrodes, not the spacing of successive sets is clearly incorrect since the spacing is to allow the previously activated emission devices to cool. This would not occur if each successive set of activated emission devices were next to each other. Thus in Cherry there are clearly rows in between the successively activated rows which are not activated. Furthermore, the patent to Suzuki '168, page 13, lines 21-23, further states that plural groups (columns) could be selected and the pulse forming voltage applied successively to the groups sequentially in a "zigzag manner" to avoid excessive heating of local areas of the substrate. An obvious pattern meeting the term "zigzag manner" would for instance include repetitively cycling the pattern of activated emission devices to the right by $[N/2n]$ rows then back to the left by $[N/2n - a]$ rows until all rows have been successively activated, where $[N/2n]$ is the integral part of the number of rows of the display divided by twice the number of rows in a set of rows and a is an lesser integer selected such that it has no common divisor with $[N/2n]$.

Finally Suzuki '591 explicitly discloses at column 15, lines 24-33 the step of forming a deposit by applying a voltage in an atmosphere containing an organic gas, i.e. voltage application in a vacuum atmosphere containing organic compounds therein in order to deposit carbon on the emission devices. Since the vacuum atmosphere contains organic compounds therein, it inherently contains an organic gas.


Conclusion

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Directions for Responses

Any formal response to this communication should be directed to the examiner's supervisor, Nimesh Patel, who can be reached at 571-272-2457.


Kenneth J. Ramsey
Primary Examiner
Art Unit 2879